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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

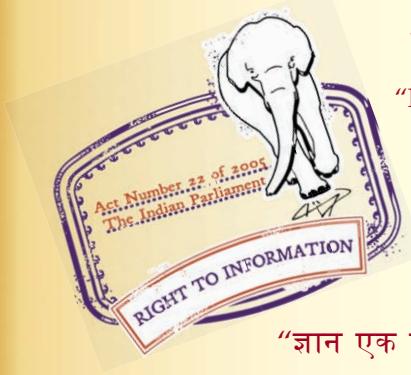
“Step Out From the Old to the New”

IS 12032-4 (1987): Graphical symbols for diagrams in the field of electrotechnology, Part 4: Passive components [ETD 1: Basic Electrotechnical Standards]

“ज्ञान से एक नये भारत का निर्माण”

Satyanareshwar Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśākām

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard***GRAPHICAL SYMBOLS FOR DIAGRAMS IN THE
FIELD OF ELECTROTECHNOLOGY****PART 4 PASSIVE COMPONENTS**

(IEC Title : Graphical Symbols for Diagrams —
Part 4 : Passive Components)

National Foreword

This Indian Standard (Part 4) which is identical with IEC Pub 617-4 (1983) 'Graphical symbols for diagrams — Part 4 : Passive components'; issued by the International Electrotechnical Commission (IEC), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Electrotechnical Standards Sectional Committee and approval of the Electrotechnical Division Council.

Cross Reference*International Standard*

IEC Pub 617-6 (1983) Graphical symbols for diagrams : Part 6 Production and conversion of electrical energy

Corresponding Indian Standard

IS : 12032 (Part 6)-1987 Graphical symbols for diagrams in the field of electrotechnology : Part 6 Production and conversion of electrical energy

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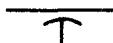
CHAPTER I: RESISTORS, CAPACITORS, INDUCTORS

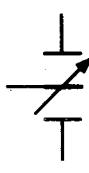
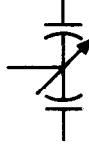
SECTION 1 – RESISTORS

No	Symbol	Description
04-01-01	Preferred form	Resistor, general symbol
04-01-02	Other form	
04-01-03		Variable resistor Adjustable resistor
04-01-04		Voltage dependent resistor Varistor (Resistor with inherent non-linear variability voltage dependent) <i>Note. – U may be replaced by V.</i>
04-01-05		Resistor with sliding contact
04-01-06		Resistor with sliding contact and off position
04-01-07		Potentiometer with sliding contact
04-01-08		Potentiometer, pre-set
04-01-09		Resistor with fixed tappings (taps), two shown
04-01-10		Shunt Resistor with separate current and voltage terminals
04-01-11		Carbon-pile resistor
04-01-12		Heating element

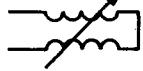
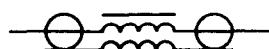
SECTION 2 - CAPACITORS

2.1 Two forms are shown, but both should not be used on the same diagram.

No.	Symbol		Description
	Preferred form	Other form	
04-02-01			Capacitor, general symbol
04-02-02			<p><i>Note.</i> - If it is necessary to identify the capacitor electrodes, the curved element shall represent:</p> <ul style="list-style-type: none"> - the outside electrode in fixed paper-dielectric and ceramic-dielectric capacitors; - the moving element in adjustable and variable capacitors; -- the low-potential element in feed-through capacitors.
04-02-03			Lead-through capacitor Feed-through capacitor
04-02-04			
04-02-05			Polarized capacitor, for example electrolytic
04-02-06			
04-02-07			Variable capacitor Adjustable capacitor
04-02-08			
04-02-09			Capacitor with pre-set adjustment
04-02-10			

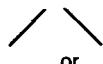
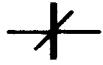
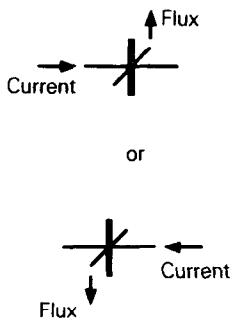
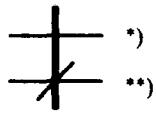
No.	Symbol	Description
04-02-11		Variable differential capacitor
04-02-12		
04-02-13		Variable split capacitor
04-02-14		
04-02-15		Temperature dependent polarized capacitor, where deliberate use is made of the temperature coefficient, for example ceramic capacitor <i>Note. - θ may be replaced by t°.</i>
04-02-16		Voltage dependent polarized capacitor, where deliberate use is made of the voltage dependent characteristic, for example semiconductor capacitor <i>Note. - U may be replaced by V.</i>

SECTION 3 – INDUCTORS

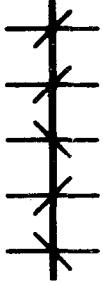
No.	Symbol	Description
04-03-01	Preferred form	 <p>Inductor Coil Winding Choke</p>
04-03-02	Other form	 <p><i>Notes 1.</i> – For transformer windings, see IEC Publication 617-6: Graphical Symbols for Diagrams, Part 6: Production and Conversion of Electrical Energy.</p> <p><i>2.</i> – If it is desired to show that the inductor has a magnetic core, a single line may be added to the symbol. The line may be annotated to indicate non-magnetic materials and it may be interrupted to indicate a gap in the core.</p>
04-03-03		<p><i>Examples:</i></p> <p>Inductor with magnetic core</p>
04-03-04		<p>Inductor with gap in magnetic core</p>
04-03-05		<p>Continuously variable inductor, shown with magnetic core</p>
04-03-06		<p>Inductor with fixed tappings (taps), two shown</p>
04-03-07		<p>Inductor with moving contact, variable in steps</p>
04-03-08		<p>Variometer</p>
04-03-09		<p>Coaxial choke with magnetic core</p>
04-03-10		<p>Ferrite bead, shown on a conductor</p>

**CHAPTER II: FERRITE CORES AND MAGNETIC
STORAGE MATRICES**

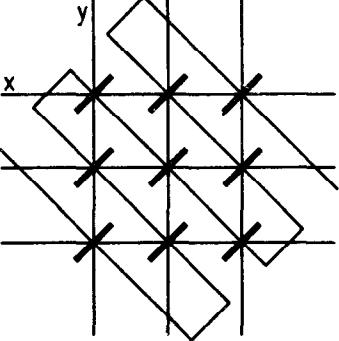
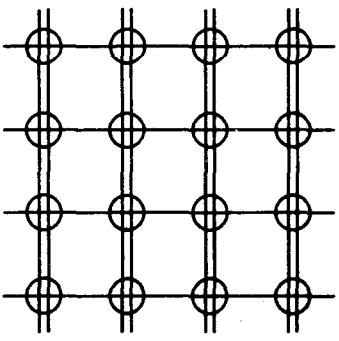
SECTION 4 – SYMBOL ELEMENTS

No.	Symbol	Description
04-04-01		Ferrite core
04-04-02	 or	<p>Flux/current direction indicator</p> <p>This symbol indicates that a horizontal line drawn at a right angle through a core symbol represents a core winding, and it also gives the relative directions of current and flux.</p> <p><i>Note.</i> – This symbol is not applicable for topographical representation.</p>
04-04-03		<p>Ferrite core with one winding</p> <p>The oblique line may be regarded as a reflector that relates the directions of current and flux as shown below.</p>  <p>For drawing convenience, lines representing conductors are often shown crossing core symbols even though there is no winding on the magnetic circuit. Except in topographical representation the use of the oblique stroke is mandatory in all cases where a line through the core symbol represents a winding.</p> <p><i>Example:</i></p>  <p>*) Conductor crossing the core symbol **) Winding on the core</p>

SECTION 5 – FERRITE CORES

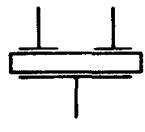
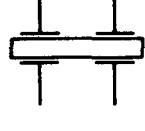
No.	Symbol	Description
04-05-01		<p>Ferrite core with five windings</p> <p><i>Note. – Information on the direction of current, its relative amplitude and the logic conditions imposed by the state of the magnetic remanence may be added.</i></p>
04-05-02		Ferrite core with one winding of m turns

SECTION 6 – MAGNETIC STORAGE MATRICES
(TOPOGRAPHICAL REPRESENTATION)

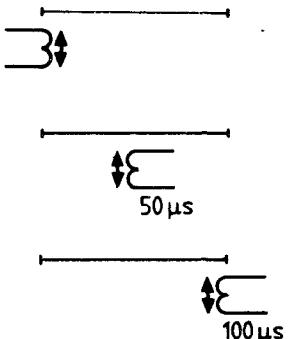
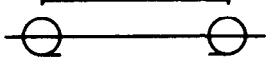
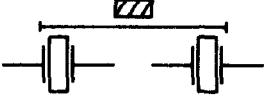
No.	Symbol	Description
04-06-01		Ferrite core matrix with x and y windings and a read-out winding. The symbol of a ferrite core, 04-04-01, is shown at 45° to the horizontal
04-06-02		Matrix arrangement comprising thin sheet magnetic stores, located between thin sheet wiring layers

**CHAPTER III: PIEZOELECTRIC CRYSTALS, ELECTRET,
DELAY LINES**

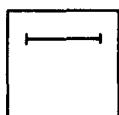
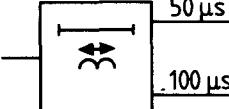
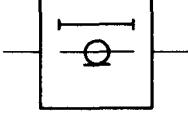
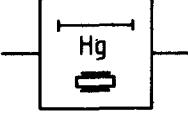
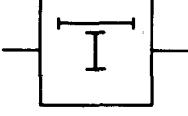
SECTION 7 – PIEZOELECTRIC CRYSTALS, ELECTRET

No.	Symbol	Description
04-07-01		Piezoelectric crystal with two electrodes
04-07-02		Piezoelectric crystal with three electrodes
04-07-03		Piezoelectric crystal with two pairs of electrodes
04-07-04		Electret with electrodes and connections <i>Note. – The longer line represents the positive pole.</i>

SECTION 8 – DELAY LINES

No.	Symbol	Description
04-08-01		<p>Magnetostrictive delay line with windings, three windings shown, in assembled representation</p> <p><i>Note. – The winding symbols may be oriented as required.</i></p>
04-08-02		<p>Magnetostrictive delay line with windings, one input and two outputs shown, in detached representation</p> <p>Input</p> <p>Intermediate output with 50 μs delay</p> <p>Final output with 100 μs delay</p>
04-08-03		Coaxial delay line
04-08-04		Solid material delay line with piezoelectric transducers

SECTION 9 – BLOCK SYMBOLS FOR DELAY LINES
AND ELEMENTS

No.	Symbol	Description
04-09-01		Delay line, general symbol Delay element, general symbol
04-09-02		Magnetostrictive delay line shown with one input and two outputs giving delays of 50 μs and 100 μs
04-09-03		Coaxial delay line
04-09-04		Mercury delay line with piezoelectric transducers
04-09-05		Delay line comprising an artificial line